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# MANUAL ARTS FOR VOCATIONAL ENDS

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# MANUAL ARTS FOR VOCATIONAL ENDS

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and "Metal Spinning."

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TO MY PARENTS

WHO MADE IT POSSIBLE IN MY YOUTH
FOR ME TO RECEIVE THE KIND OF AN
EDUCATION FOR WHICH THIS
LITTLE BOOK MAKES AN
APPEAL.

## PREFACE.

The agitation of industrial education during the past few years has made all teachers of the manual arts in elementary and grammar grades, as well as in the high school, consider the question of the sufficiency of their subject and the efficiency of their teaching. If the manual arts were first introduced into the public schools for the purpose of making boys and girls more efficient community workers and if, after twenty-five years of instruction in the manual arts, it is found that boys and girls are still unable, when they leave school, to meet reasonable community demands, then something should be done to change this condition. Certainly the public schools should be held responsible for an education which will enable the youth of our land to perform a service upon leaving school immediately profitable both to themselves and to the community at large.

If one is to receive a profitable return from a wage-earning occupation he must prepare particularly to do what is required of those engaged in the occupation. A vocational tendency, therefore, must obtain somewhere in the process of education. Inasmuch as the large majority of those at any time enrolled in the public schools must find a means of livelihood early in life, it is imperative that the public schools, even in the lower grades, offer an opportunity for vocational work.

It is because of this necessity, and because America is so largely industrial that industrial education has recently become prominent as a subject not only for discussion in educational circles but for action in legislative bodies.

Believing that the manual arts should and may have a prominent place in that branch of vocational education known as industrial education, the author has urged upon his auditors in classroom and lecture room the need of a reorganization and an extension of the manual arts to meet the needs of the newer education. If by means of publication his appeal can be made to a larger number of people, this book will serve its purpose.

May, 1912. F. D. Crawshaw.

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## CHAPTER I.

### A General Discussion of the Relation between Manual Training and Industrial Education.

Because we often estimate school work in memory values or in terms of knowledge rather than power, we judge the work of the manual arts superficially. When we see a boy making a model in wood we are at first inclined to think of his activity as physical only, because the skilled workman in doing what we see the boy do is performing a task which requires little thought. He has done it so many times that with him the work is almost, if not quite, automatic. Not so with the boy. He has not reached the point where he has formed a *habit,* but rather he is working through an experience which calls for foresight and judgment on the one hand, and muscular control and correct vision on the other. He is progressing in a truly educational process and developing power thereby. Incidentally, he is coming into possession of a considerable amount of knowledge.

My purpose in making these statements at the beginning is to clarify the atmosphere with reference to what education really is. Professor W. C. Bagley of the University of Illinois defines education as follows:

"Education may be tentatively defined then, as the process by means of which the individual acquires experiences that will function in rendering more efficient

his future action."[1] It may be in the manual arts shop and the adjustment may have to do with materials as well as ideas. It would hardly seem necessary in this day and age when men are called upon to produce results under conditions which never existed before and which vary almost as rapidly as the clock ticks off the hours or even the minutes of the day, to emphasize the fact that the *whole* man must be trained to be alert and skillful in adjusting himself to new conditions. It isn't the first hand knowledge that we need so much as it is the grasp of a situation so as to *adjust* ourselves to it. Teachers of the manual arts contend that in order to do this, one's experience must have been of such a character that he can appreciate the problems of the man who works with his hands as well as the one who earns his livelihood by virtue of his mental attainments alone. Manual training serves as a means to educate the individual on *many* sides by giving him different angle perspectives and by familiarizing him with world materials which the classroom subjects alone cannot do.

It may not be amiss to venture the statement that school work in the main does not effectually place the individual face to face with conditions as they exist in the adult world. Perhaps it is impossible so to reorganize the work of the school process that school children will realize their individuality as members of the community *outside* of the school. It seems possible, however, to make all school work relate closely to life problems and thereby to the *real* tasks of life, even if actual performance is impossible. It is this social and economic significance

[1] The Educational Process, by W. C. Bagley, The Macmillan Co., p. 22.

that manual training, by using industrial means, should give to the work of the school.

In almost every state in the Union to-day, teachers and school administrators are seeking to motivate all school work and to give it a *life* value. In many educational meetings during this past year educators have plead for a closer connection between the life of the school and the life of the community. Naturally enough the manual arts teacher looks to the industrial activities for suggestions which will help him make shopwork and drawing serve to tie together the school and the community life. The emphasis, therefore, which is being placed upon manual training to-day is this: (1) Give the shop and drawing problems as much thought now as they have been given in the past to make them show the significance of the abstract school material. (2) Take account of all the discoveries of child study in coordinating properly the motor and the mental elements in the educative process. (3) Vitalize all school work by strongly socializing it. Do all these things, which manual training has sought to do in the past, but do one thing more to take it out of what some have called the dilettante stage of development —make it *strongly industrial.* That is, give every shop process an industrial rating to evaluate in the child's mind the process in the industrial shop and a similar process in the school shop. Make the school process as closely as possible a duplicate of the commercial shop process, and still retain the educational values, mental, moral and all the rest, which the manual training of the past has claimed.

In one sense of the word this is not far from the thought which must have been in the minds of some of

the early educational reformers who first introduced hand work into the school. The Russians, for example, introduced a form of shopwork into the Imperial Technical School in Moscow, which was good progressive hand tool work, and which had as one of its ultimate ends the preparation of young men for the skilled tool and machine work in government shops. The first manual training school in the United States, viz., the St. Louis Manual Training School had for one of its objects the training of boys for superior shop positions. In both of these instances, and others, however, the school shopwork was given in the secondary school period. When later on it was introduced into the lower grades, the prominence of the commercial and industrial values was lost sight of, and social and particularly educational values took their place. Thus the issues were confused and during the last few years high school manual training work has become formal and, in many cases, has lost its possible vocational value. Notwithstanding this fact, however, there has never been a time when there could not be found a reason for the existence of manual training in both the elementary and secondary school grades. Since the beginning of the agitation upon the motor element in school work there have been not a few of the strong educators in each decade who have argued in favor of the physical and the manual activities in the school. If we wish to justify manual training on the ground of its having an historical setting we may refer to a long list of educators who have in a large measure been responsible for educational methods and who have given their testimony in favor of manual work in schools.

We learn from the historical writings of the Ancient

Jews that these people put great store in the fact that every boy should be possessed of a trade, and in their educational system they provided for one-half day in regular school work as it was pursued at that time, and one-half day in the shop. During the last few centuries, this plan has been abandoned in many countries in public school work, but in some institutions, notably the state institutions for the care of dependents and other state charges, the plan has been continued. It is interesting to note at this time that it is again coming into favor in public educational systems, and while we may be as yet loath to adopt it generally under the guise of industrial education, it is becoming more and more popular. Manual training supervisors and directors are asking for more time, even though they do not request a half-day, the time given in the reformatory institutions, for their work each day of the week. In many instances it is said by men who speak authoritatively upon manual training subjects, that unless more time is devoted to the hand training there is little use in presenting the work at all. It is very certain that with not more than an hour and a half per week devoted to shop and drawing (a total of 60 hours or less than eight, 8-hour days per year) little can be done other than that which is referred to as dilettante or amateurish.

The Greeks, too, in the early times presented a scheme of harmonious education; it possessed the elements of moral, mental and physical education.

Somewhat after the plan of the Ancient Jews, Luther preached the doctrine of practical work in the schools, and Ulrich Zwingli said, that every burgher should have a handicraft by which he could make a living. "Were this the practice," he said, "we should be rid of idleness, root

and branch, and our bodies would be healthier and stronger."

"It is not a soul; it is not a body that has to be educated," said the great French philosopher, Michel de Montaigne, "it is a man." Down through the ages men have believed in this theory until it has become a law upon which all education is based, and yet how far short of it do we come in much that we do in our schools! Of all the school subjects, however, manual training, as much as any other one subject probably, is helping to make this law a reality in modern educational methods. Notwithstanding this fact, it may do more. It may help educate the whole man by properly utilizing his hands and his eyes as well as his mind in his general development, and more, also, to acquaint him with the activities of those who make up the great army of workers whose ranks such a large proportion of our American youth join long before they complete the common school or grammar grades. Mr. Bloomfield, in his most estimable little book, "The Vocational Guidance of Youth," says, in quoting the Committee on Attendance at Continuation Schools in England and Wales, "Unless children are thus cared for at this turning-point in their lives, the store of knowledge and discipline acquired at school will be quickly dissipated and they will soon become unfit either for employment or for further education."[2] The words of this quotation refer to the guidance which may be given those who, leaving school at 14 years of age, may and usually do enter "blind alley" occupations. Those positions which may be characterized thus are destructive of life work

[2] The Vocational Guidance of Youth, by Meyer Bloomfield, Houghton, Mifflin & Co., p. 17.

motives and are alluring only because of their high initial wages.

The social and economic conditions surrounding the youth of our present metropolitan cities did not affect boys and girls in the same degree when manual training was first employed as an educational means. When, therefore, we hear it said that manual training has been a failure we may justly challenge the accuser. Manual training though started in some schools to prepare boys more effectively to cope with life's problems, has, in general, been justified upon the basis of its cultural value, and it was because of this value that the older educational reformers found a reason for introducing and defending it.

It may be true now, as it was in former times, that this branch of educational work may be justified upon this traditional ground, especially so for that class of public school children who continue in school work beyond the state school age limit. The pressure of economic necessity, however, makes it imperative for many to leave school early in life, and for this class something more than the purely cultural value should obtain. If, therefore, we can in some way revert to the content if not the method of earlier school hand training and retain the cultural value as well, we shall accomplish a just result and meet present needs for both classes of pupils concerned.

Comenius, the father of modern education, Locke, Rousseau, and others of the seventeenth and eighteenth centuries, gave handwork a prominent place in their plans for the education of the masses. Pestalozzi and Froebel not much more than one hundred years ago evidenced in their great work for education a firm belief in the develop-

ment of the physical together with the mental to produce the Utopian in education. "Man only understands thoroughly that which he is able to produce" is a Froebelian quotation which every teacher must recognize as a fundamental truth. How many, many times have we had this impressed upon us, as we have endeavored to convey to others the ideas which we possess. What better way have many of us found than to fashion with our own hands out of some common material, such as clay or wood, the object which expressed to others the information we wished to impart? If this is true with us in our lives, why is it not true in the lives of our pupils?

History in a multitude of instances bears testimony to the fact that manual training is an essential educational means. We need not review modern history as we have ancient history to show the trend of thought in the direction of the physical activities as a part of the educative process. We know that in Europe to-day and in our own country, the manual training movement is spreading at a tremendous pace. It has had its pitfalls to be sure. It is still a youthful subject as compared with much that has a prominent place in the schools. It, therefore, has been a subject of much criticism and has had to develop in spite of many sad mistakes. It doubtless still has such a development to make that in a few years we may not recognize as worth while any of the handwork of today. But we shall agree, I am sure, that today its position in the curriculum is one of increasing dignity and importance. Men of deep and broad thought are helping to push it forward.

President David Felmley of the Illinois State Normal University, before the State Teachers' Association of Illi-

nois recently said: "The best values in manual training are in the habits, ideals, and attitudes it fosters. It interests many pupils who are not successful in other school studies, holds them in school, imparts new zest for some of their other studies, and gives a sense of capacity, power, and effectiveness to many a boy who is almost ready to accept the teacher's estimate of his incapacity and worthlessness. To strengthen the will it is necessary to develop the willingness, the power, and the determination to think connectedly. The ordinary school studies afford many opportunities for complex thinking, but many children have little interest in abstractions. They must think in the concrete. Manual training is interesting, it connects our thinking closely with our doing." [3] By this connection the achievements in life are made possible.

Dr. W. C. Bagley, Professor of Education in the University of Illinois, in recent lectures [4] has impressed his classes with the idea that the greatest thing in the world is not happiness, peace, contentment, or long life, but achievement. We may make achievement a possible ideal in life if, by the proper incentives, *to achieve* becomes the pupil's goal. It is possible to form the habit to achieve. President David Felmley, of the Illinois State Normal University, says, "It is, however, possible to form a habit of completing one's undertakings, of being deliberate and cautious before acting. Furthermore, if a habit has been formed, not by external constraint, but voluntarily, under the inspiration of an ideal, the same ideal may create

[3] Illinois State Teacher's Association Report, Dec. 28-30, 1909. Paper: "The Educational Value of Manual Training," by David Felmley, p. 101.

[4] Given in Summer Session of 1909 at the University of Illinois.

habits in other fields. Thus, if the habit of neatness is formed through the pupil taking pride in a clean shop and an orderly bench because of his fidelity to an abstract ideal of neatness and order, the same ideal may function by creating similar habits in regard to his clothing, his books, desk, and manuscript. Now, manual training leads all other school work in its power to develop fidelity to ideals because our work remains as a visible, tangible thing just as we have made it." [5]

Again Dr. Felmley says, "The self-respect enjoyed by skilled workmen is one of the most substantial qualities of good citizenship. Longfellow's Village Blacksmith 'looked the whole world in the face.' The free cities of the middle ages owed their democratic character and political capacity to the members of the gilds, and it is in the homes of such workmen, next possibly to our farm homes, in which our best citizenship is bred today." [6]

In this statement Dr. Felmley sounds the key note for the transition which it is possible for us to make in our manual arts work to make it more nearly comply with the needs of the time, viz.; to have a school work which will at every possible point touch life as it exists in society. The school must not only act upon and for the community, but must be a reflection of the community's activities and thereby become a part of the community life. The manual arts, by using community materials and, to a degree, at least, its vocational methods, may help in this process.

[5] Illinois State Teachers' Association Report, Dec. 28-30, 1909. Paper: "The Educational Value of Manual Training," by David Felmley, p. 102.

[6] Ibid p. 103.

Thus it would seem that there is a growing realization of the needs of our American youth for an education which will both prepare them for either continued school work following the grammar grades or for service in a wage-earning position which has in it the elements of a progressive serviceable life. Men and women must soon be trained in sufficient numbers, and broadly enough to teach the manual arts, not as mere workmen, but as individuals who see that education for the masses today means a practical and a broad knowledge of many things, and also a *specific* knowledge about, and a power to do, some particular thing. To secure teachers with such ideals is a difficult task.

## CHAPTER II

### Some Possibilities and Opportunities in the Organization of the Manual Arts.

Some experiments which have been made in recent years to provide for better equipped industrial workers have seemed to indicate that little account is being taken of the possibilities afforded by manual training in the public schools to accomplish in part, at least, the desired results. Unquestionably the trade school, the special industrial school and the continuation school are each and all a means to a desired end. It is a question, however, whether our present public school organization may not do much that it is not now doing to aid in the vocational education movement. If adjustments may be made without serious loss of any inherent good qualities in the present organization, there would seem to be little argument in favor of duplication by creating a new organization and an entirely new system of schools.

With renewed vigor we are asking ourselves three old questions:

1. What is manual training for?
2. Whom is it for?
3. How can it best prepare the recipients of its benefits, individually and collectively, to cope with the present industrial conditions?

In a public school system, whether it deals with the grammar grades, high school, college or university, we cannot provide for serving the classes only. We must in all our plans consider the masses. We must consider the 90 or more per cent whom we may describe as normal in physical and mental possibilities. For the masses we must make a provision which results in a system of universal education in which "the best results will always follow when as many subjects as possible and as many vocations as may be are taught together in the same school, under the same management and to the same body of men." [1]

In answer to the question, then,—"What is manual training for?"—, I would say that its purpose is to play a necessary part in the development of every individual toward complete citizenship. Does this mean that the object of manual training should be technique, skill, the capture of the boy's interest, or the development of community interests? It means that all of these are legitimate objects. These are only some of the possibilities which center in the thought that to keep a live boy in school and make him good for anything when he gets out of it, some portion of his time must relate directly to a business activity outside of the school. This, manual training must do, if it is to maintain a responsible place within the school system.

Assuming now that every boy in school is a live one, it is easy to answer the second question,—'Whom is manual training for?'—, by saying that it is for every boy in school. It is, therefore, a part of a plan to provide

[1] Dean Eugene Davenport, The University of Illinois. In a bulletin entitled: "Education for Efficiency," p. 7.

a general education. It is a part of universal education or education for efficiency. We would conclude from this statement that, certainly in the elementary grades and possibly in the grammar grades, to direct manual training in the line of any one or a few industrial activities is absurd. If manual training is worth while, we should never give up the idea that it is for every boy, and that it is just as important in his plan for life as any other subject in the curriculum. We must continue to believe, that, for the mass of students, none of the grades below the high school is the place for specialization. We must become resourceful enough either to give a form of manual training which involves the fundamentals in many industries, or else we must enrich our equipment by adding to our present shops those which will provide for the important industries. To such an extent a semi-specialization may be made possible. To this extent only specialization should be carried below the high school and for those only who must go into wage earning positions before the high school is reached.

There was a time when a school teacher could afford to say, because of the limited opportunities in active life, that one individual was especially adapted for a professional career, and another for some one of the industrial pursuits. Today, however, when we have an almost unlimited number of specialties, it is not within the province of the school-master either to outline one's future by positive prediction, or by such an arrangement of studies that there can be but one future for the individual who follows the arrangement. We must confess, however, that this is just what many a school-master has done, if his arrangement of studies has been such that

the sequence of grammar school, high school, college and university has been the only possible one.

We have been altogether too much interested, if we were high school teachers, in keeping our school on the accredited list of some university. What we should be concerned in is a school so complete that its proper maintenance may mean a continuous growth for every boy toward a universal education. It must be so organized that there are the vocational and the non-vocational courses paralleling each other, and that the courses in these two lines shall be so administered that whenever a boy steps from the classroom into the larger school of activity—the office, the accounting room, or the shop—he may be an efficient unit in his surroundings. My answer then to the question,—"How can manual training best prepare the students individually and collectively to meet the present industrial conditions?" is: by increasing the facilities of the school so that under one management and for all its pupils it may articulate with the community as a part of it.

Long ago it was learned that every man must have two educations—one, the vocational, and the other, the non-vocational. The one to make him a bread winner, the other to make him a man among men. Admitting now, if we can, that the schools are not fulfilling their obligation to society in this respect, and that manual training teachers are shareholders with their brother teachers concerned in more purely academic subjects, what can we do to change our methods?

Already we have from four to eight shops equipped for wood and metal work. We have drawing rooms to provide for three classes of mechanical drawing and as

many classes of freehand drawing. We have science laboratories for practically all the sciences that are taught. If now we should provide an equipment for some of the special industries of the community, such for example as pottery, printing, and weaving, and modify the courses in the shops already provided by giving the courses of study conducted in them a strong industrial tendency, we would be able to meet any reasonable demands thus far made for industrial education. The transformation, then, of the present public high school would mean a comparatively small expenditure of money. The maintenance of such a school would be slightly greater than that of the large high schools at present equipped for a variety of work. The difference in this particular, however, would not be great. It really is not a question of first expense or maintenance expense; it is a question of purpose. We can do the thing that we set out to do if we are all agreed upon a particular plan.

It is not necessary for us at this time to consider definitely the kind of work to be done in this new school. Let us hope, however, that it may be such as to retain all of the valuable elements in our present day manual training work, and to embody also such fundamental principles of industries as to make it possible for a boy, when leaving school either before graduation or at the time of graduation, to "make good." There are many things of actual industrial value which manual training teachers might agree upon as satisfactory to teach, if viewed from the standpoint of our present-day ideals, both educational and industrial.

It is believed that we may safely say that some of the results of a school, such as has been considered in this illustration, would be these:

*First,* to control under a single management the whole of a boy's education in school.

*Second,* to educate for the industries rather than to train for them.

*Third,* to enrich the industries by sending into them men of judgment and balance.

*Fourth,* to emphasize skill, technique, and workmanship by the employment of industrial standards.

*Fifth,* to prepare young people for the actual work of life while they are being given all of the refining and uplifting influences which the non-vocational studies provide.

*Sixth,* to develop a system which is not at all times preparing for something far ahead. At whatever point the boy might leave school he would be prepared to do what is one of the hardest things for any of us to do; namely, to adjust ourselves to present conditions. Such an adjustment is made because of our appreciation of the relation between the means and the ends in life; and it is with reference to this relation that the course of study in our new school must be designed.

Regarding the limitations for industrial education, if the plan outlined is followed, three may be presented:—

(1) The boy's age. We cannot expect a boy of fourteen or fifteen to do a man's full work no matter what his preparation for a man's work may be. The schools can never turn him out at the end of a common school period as an A No. 1 industrial workman.

(2) His natural rights. America is a democracy; and while it may be true that the boys of 100 men 50 years from now will be doing much the same thing their fathers are at present doing, still we cannot prophesy

truly of any particular one of them. We owe every normal individual a chance to reach one goal—that which the best equipped individual in the community may some day reach. He and not we, by the natural law of selection and rejection, must find his place. If we have done our part, when he does find it, it will be comfortable by virtue of his broad rather than his narrow education.

(3) His natural abilities. Believe what we may regarding our being born into the world as equals, we know that our present and future environment limits our possibilities. No matter what form of industrial education is attempted, there will be those who will reach their limit short of our expectation. Let us not, however, provide such a course that they shall fall by the wayside. It is perfectly possible when they discontinue their school education and commence that which results from the more active and broader community life, for them to stand instead of fall.

Let us hope, therefore, for industrial education, not merely industrial training; for the parallel course of study which means vocational and non-vocational opportunities for all; for the unified system which economizes time, space and money for the boy and the community of which he is a part; for the universal education which means an industrial efficiency as well as a social efficiency, which gives hope to every individual for something better, but which for every station in life gives the satisfaction that can come only when we feel that we possess a reserve power which is the result of broadening rather than narrowing influences.

## CHAPTER III

### The Organization and Teaching of the Manual Arts in the Elementary Grades.

Enough has been said thus far to suggest two things:

(1) That the manual arts in all the grades of school work may and probably should keep in touch with vocational and especially with industrial activities.

(2) That in all grades above those ordinarily called elementary the manual arts must have a strong vocational bearing, if they are to serve their full purpose.

In any form of educational work, even in that which is designed for those who did not receive the advantages of an early school training, it is still considered good practice to lay a general foundation for future work by considering fundamental principles. In the teaching of manual arts we would naturally consider the elementary grades the place in the school process where material should be handled with regard to a general development rather than viewed as a means to some specific end. It is in these grades then that the manual arts should be taught less as a subject and more as a method or process, —in short, as a means to a general educational end. Manual training, then, is a term which can best be used when speaking of the manual arts as taught in the elementary school period.

It is assumed that the modern school methods for this period do not consider any of the many school subjects

in a formal manner. Number work for example in the first two or three grades is no longer taught in the abstract. Indeed it is not taught as concrete number work even. Facts concerning numbers are learned by the first and second grade children by means of association. This example suggests that all educational material in these grades is used in the bulk rather than in parts. The little child absorbs, as it were, a certain amount of information concerning many things which later on in his progress he knows as arithmetic, language, geography, history or any one of the subdivisions into which educational material is divided. Acting upon the same general plan in teaching construction work (a name given to the manual arts in the lower grades) we would use materials in the early grade handwork whenever they can be made to serve the purpose of broadening the educational horizon of the child better than any other available means.

It may be well now for us to consider just a few of the things which construction work in the lower grades may be able to do for the child in the process of acquiring general information and gaining power to discriminate and assimilate in a natural way.

First of all, perhaps, it will give him a natural outlet for the expenditure of his physical energy.

Second; it affords him a means of social occupation in the use of the material with which he is thoroughly familiar.

Third; it gives him what Dr. John Dewey calls, "Modes of social occupation with which he is thoroughly familiar in his everyday surroundings." [1]

[1] "The Place of Manual Training in the Elementary Course of Study," by John Dewey, Manual Training Magazine, Vol. 2, No. 4, July, 1901, p. 194.

Fourth; it enables him to acquire a certain technique and a degree of skill in the simple operations which are fundamental in vocational activities.

Fifth; it establishes standards in neatness, precision, judgment and the cardinal principles which obtain in all life's activities.

It is one thing to theorize and quite another to put one's theories into practice. Just how one is to correlate the construction work with the other subjects in the curriculum is a difficult problem in any grade, but nowhere probably more difficult than in the lower grades. What materials to use and when and how to use them are subjects worthy of the most philosophic consideration coupled with extreme attention to practical conditions. The word practical is used here because it is believed that even in the elementary grades we can and should teach life at every possible point consistent with the best educational theories.

Indeed, it is only when the little child lives in a natural environment where familiar objects and association of objects are common-place that he finds a situation in which he may develop. The common-place things to the child are those which exist in the home and its immediate surroundings. This very fact, however, sometimes becomes a barrier in the early progress which is possible in the schoolroom. To give relaxation to the child, the teacher will allow certain motor activities to be repeated again and again which are well understood by the child, and many times are those with which he is familiar in his home. Such motor activities are commonly called, "busy work." They should in no case be confused with motor activities which are accompanied by an active

mental process. These latter activities are of the class known as manual training.

It is not a difficult task to plan a course in handwork which may be good busy work and possibly have a value in training the hand and eye and developing the child in new habits of accuracy and neatness, but such a course may not be good manual training. If the theories thus far stated were to be summarized, one might say that the best course in manual training must consider not only the training of the hand and the eye in some isolated occupation, but it must be a course which touches the life of the child in his work and play, in school and at home. It must also be a course which acts as an educational flux in joining one subject in the curriculum to another. It must tend to show the child the relationship between the regular school subjects and his outdoor life—his play at present and his possible work in the future. In short, it must be a course which makes him feel his importance as a living, working, social being. Such a course may be practical, and educational as well, and unless it is practical it will not be in the highest degree educational.

What then is manual training according to such a standard? First and foremost, it is a course in handwork dealing with elementary industrial processes which have a place in present industrial life, have had a place in the industrial life of the past, and probably will have in that of the future. Such a course, from the standpoint of educational theory, will be recognized as serviceble and practical for actual schoolroom conditions, because it will allow and demand a correlation with geography, history, language, reading, and arithmetic. It will be practical from the standpoint of the community, because

it will teach the child the elements of the occupations followed by members of the community.

In the second place, the best course in manual training always provides problems in handwork in a material which the pupils can handle successfully and that the teacher understands and enjoys. Some courses in manual training have been designed which require the children to work in materials too difficult for them, and without regard to the experience and ability of the teacher. The result in such cases may be to give the children a relaxation from the regular book work, but it does not insure growth in good habits, either of thought or action.

Thirdly, the best manual training takes account of skill in its inventory of educational and industrial values. We sometimes hear it said that a consideration of technical processes in elementary manual training develops merely the physical or manual side of the child's nature and loses sight of his mental development. If we consider the *mere mechanical operation* in our work to the extent of losing sight of the child and his interests—the material product and not the means—certainly this statement must have some ground for being made. On the other hand, to allow the child to do a thing as he pleases, thinking he will readily discover a good method of work through his experiments, is neither good education nor good common sense. We demand the best books and the best teaching methods for arithmetic, language and geography. Why should we not do as much in manual training?

To show more clearly what I mean by practical and educational manual training, let me give specific illustrations. In some schools where a large number of pupils are taught, and this is the condition under which work

must be done in the average public school, it has been customary for the supervisor or teacher to plan in detail each exercise that the class must make in a given course. The material is selected by the teacher, and each pupil in a class is required to make a certain thing at a certain time. Often the thing made is of no value to the maker after its completion; it is simply an exercise in the use of certain tools or the handling of certain materials. The course is designed to teach the child certain definite processes in handwork. In such a course the child may enter upon his work with considerable enthusiasm because he is doing something with his hands—and what child does not love to do things with his hands? Soon, however, the interest in the mere doing is gone, except for a few who may have a strong liking for the particular tools used or have exceptional ability to work in the particular material chosen. The result is that the class interest is lost because the child is not treated as a thinking, feeling individual, but merely as part of a system.

Now this sort of manual training may teach good methods of handling tools, but it does not stimulate the best thought; it may make the pupil accurate in certain work, but it does not make him accurate in judgment; it does not strengthen his reasoning powers. Such manual training may make the pupil draw neat lines, handle a pencil and ruler well or control the needle in making a particular stitch, but does it tend to make the child thoughtful and interested in drawing or sewing? Probably not. Why? Because the real child and his desires and ambitions have not been considered.

A second illustration: The supervisor or teacher does not plan his course before the school year opens; he puts

his own judgment in the background and waits for the child's demands. This is the question he asks on the first day of school, "Well, children, what shall we make this year?" The answer: "A play house of wood." Thus the work for the year is chosen, and down to the shop goes the class from the third and fourth grades. Without any instruction concerning the use of tools or the value of wood, without any knowledge of the building of a house, saws, planes, hammers and nails are used to mutilate and destroy valuable material. And what is the result? One of two things: Either the teacher finally makes the play house or the pupils make something they are dissatisfied with or even ashamed of.

This sort of manual training may develop a certain kind of individuality, a sort of self reliance, but it does not train in good habits mentally, morally or physically. We shall agree, I am sure, that neither of these illustrations suggests the kind of manual training we want our children to have, yet in both we find good points. Let us take the good from each and use it in a third illustration.

The supervisor selects a material to be used in a certain grade because it is used in the community in which the school is placed, and because experience has shown that it may be used successfully by children of the age found in that grade.

He plans his course so far as the tool exercises or methods of manipulation are concerned, but he does not decide upon the particular thing to be made by each pupil. He leaves that to the good judgment of the class teacher and desires of the individual pupils. The classes meet and begin work with the understanding that certain

things must be learned before they can do well what they wish to do, and with the further understanding that when the proper time comes they will be permitted to work out their individual plans. Each pupil learns to handle both material and tools in exercises which may or may not have a value in themselves when completed. While this is being done, the language, geography, history and arithmetic are incidentally used to show the child what can be done in his manual work. When this elementary work is completed each child uses his new knowledge and new power in developing his own individual project under the supervision of his teacher. Now what is the result of this kind of manual training? Certainly this: Good habits of thought and action are formed. Proper methods of working with tools are learned. An interest in the thing being done is kept, and results which are worthy of the effort put forth are secured. Self-reliance and individuality are developed. The pupil becomes both a rational thinker and a careful doer. By such results practical and educational manual training may be tested.

Emphasizing in another way the thought which is expressed in the above paragraphs, it may not be out of place to say a word concerning the process of recapitulation which manual training has sought to follow. The theory has sometimes been this: To educate the child properly we must provide for him the experiences of primitive man.

"That the child should recapitulate the exact external conditions, performances, and blunders of primitive man is a ludicrous proposition. That he should assume a similar *attitude* is almost inevitable. The former conception leads to the notion that, since the race had to

advance out of the errors of an animistic interpretation of nature to the truth as made known in science, the child must be kept in the mist of a sentimental and myth-enwrapped nature study before he can deal in any direct and truthful way with things and forces about him. The second conception means that it is the business of education to get hold of the essential underlying attitude which the child has in common with primitive man, in order to give it such play and expression as to avoid the errors and wanderings of his forefathers, and to come to the ends and realities toward which, after all, primitive man was struggling." [2]

To work from the concrete to the abstract; to follow the sensible interpretation of the recapitulation theory; and to vitalize the work of text-book study are prime motives of manual training, which are responsible for many courses of study. Because manual training puts the theory of the book into material in three dimension form, it connects the theory of the book with the facts in live problems and vitalizes the whole process of thinking and doing. In this way the child gets definite and tangible results which mean much to him as a measure of his success. There is a certain relaxation, too, in changing from the mental activity of the classroom to that of the shop and drawing room, where the mind is allowed to work to the accompaniment of the hand and eye. "To give play, to give expression to his motor instincts, and to do this in such a way that the child shall be brought to know the larger aims and processes of

[2] The Place of Manual Training in the Elementary Course of Study, by John Dewey, Manual Training Magazine, Vol. 2, No. 4, July, 1901, pp. 195 and 196.

living, is the problem."[8] In the construction work there is a certain review of the mental impressions obtained in the other classroom work. Such a carrying-over process tends to develop attention, discrimination, organization and logical thinking.

The proposition herein set forth then is this: For the lower grades, let us use the most easily handled materials which have an industrial significance, such as clay, card, yarn, textiles and paper, to make use of the play instincts of the child through motor activity which forms an acquaintance with actual social and economic problems. In their use we shall consider two practical elements in the school organization, viz.,

First:—Whether or not a supervisor is employed, the classroom teacher in the lower grades must be the individual who will teach the construction work. She is the one who knows the actual living conditions of the classroom: what stories are being told; what facts in geography and history are being developed; when the children need relaxation the most, and numerous other incidental but most vital elements in the successful teaching of little children.

Second:—The plan of the grade teachers or special teachers, as the case may be, must be understood in order that the construction work may work hand in hand with all other forms of school work in developing the problems which have been set as grade problems in accordance with the general course of study.

As a rule the construction work in the lower grades

[8] The Place of Manual Training in the Elementary Course of Study, by John Dewey, Manual Training Magazine, Vol. 2, No. 4, July, 1901, p. 198.

will be divided into two classes, viz., the group or class project and the individual project. The group or class project is one in which all members of a class participate. It may be the making of a play house, or building on a sand-table the home of some one about whom the class has studied, as for example, the home of Robinson Crusoe; or it may be the working out in miniature form some historical scene or geographical setting as told by means of story in the regular language work. In such a project each individual has a part in the assembling of details which make up the whole.

These parts which are assembled will give an opportunity for every individual to make some particular thing such as a box, a house, a sled, etc. Or the individual project may be one which is called for because of the community or individual activities of the people about whom the group or class project serves to form an impression to be retained by the child.

Thus a hammock or a rug may be the individual project in the making of which the child becomes acquainted with certain industrial methods as used in some vocation and by means of which he acquires technique and some skill. Incidentally also there is developed by means of the individual project at least some appreciation of accuracy, neatness, order, etc.

Perhaps no better consideration of the place of constructive work in the lower grades can be shown than that which Dr. John Dewey gives in the following quotation:

"As a matter of convenience, the studies of the elementary curriculum may be placed under three heads; this arrangement is also, I think, of some philosophic value. We have, first, the studies which are not so much studies

as active pursuits or occupations—modes of activity which appeal to the child for their own sake, and yet lend themselves to educative ends. Secondly, there is the subject-matter which gives us the background of social life. I include here both geography and history—history as the record of what has made present forms of associated life what they are; geography as the statement of the physical conditions and theater of man's social activities. At more advanced stages of education it may be desirable to specialize these subjects in such a way that they lose this direct relationship to social life. But in elementary education, of which I am speaking, I conceive that they are valuable just in the degree in which they are treated as furnishing social background. Thirdly, we have the studies which give the pupil command of the forms and methods of intellectual communication and inquiry. Such studies as reading, grammar and more technical modes of arithmetic are the instrumentalities which the race has worked out as best adapted to further its distinctively intellectual interests. The child's need of command of these, so that, using them freely for himself, he can appropriate the intellectual products of civilization, is so obvious that they constitute the bulk of the traditional curriculum.

"Looking along the line of these three groups, we see a movement away from direct personal and social interest to its indirect and remote forms. The first group presents to the child the same sort of activities that occupy him directly in his daily life; and re-presents to him modes of social occupation with which he is thoroughly familiar in his everyday surroundings. The second group is still social, but gives us the background rather than the direct reality of associated life. The third is social, but rather

in its ultimate motives and effects—in maintaining the intellectual continuity of civilization—than in itself or in any of its more immediate suggestions and associations. Manual training, constructive work (or whatever name we may care to employ), clearly belongs in the first group and makes up a very large part of it." [4]

Another quotation, taken from the writings of Dr. C. Hanford Henderson, will serve both to explain the meaning of handwork in the lower grades and to suggest, at least, the difference between it and that which will be considered in a later chapter for the higher grades.

"The task proposed for itself by sloyd (a form of manual training) is exceedingly subtle,—to engage the interest and spontaneity and affection of a child, to cultivate the sense of beauty and the finer sense of touch, to increase the general bodily health and poise, and finally, by the directed and purposeful overcoming of the resistance of the material, to give power of brain and skill of hand. It is a long program, but sloyd accomplishes it successfully just in proportion to its fidelity to the practical principle of cause and effect. In the manual training first introduced into this country, both motive and method were different. The motive was technical,—the cultivation of a dexterity which might afterward be applied in industrial operations. The term 'educational' is often given to this earlier technical work, and was sincerely given by the people who introduced it; but they meant something quite different from what we mean when we use the term. As opposed to the making of

[4] The Place of Manual Training in the Elementary Course of Study, by John Dewey, Manual Training Magazine, Vol. 2, No. 4, July, 1901, pp. 193 and 194.

something that would have a direct market value, the work was industrially educative rather than industrially productive; and the earlier teachers of manual training devised abstract joints and exercises by way of models, in order to emphasize this difference. They feared that the schools might some time become factories, and start out on the dangerous road of self-support. But the real difference is more profound than this. The earlier manual training was undertaken in order to give a skill of hand to be used in industry. It was a training *of* the hand. The later or educational manual training is undertaken in order to give a skill of organism to be used in life. It is a training *through* the hand. The one motive is technical. The other is human." [5]

While it is true that the emphasis upon the manual arts is at the present time in the direction of the industrial it is quite as true that the older emphasis, viz., that of its educational and cultural value should continue to be prominent. There must be a time when the general is considered rather than the special—when a substructure must be laid for future building. Such a time in the teaching of the manual arts is found in the first three or four years of the child's school life. Here is the place then for breadth rather than narrowness, for some depth of understanding, likewise, rather than a shallow or superficial view.

[5] "Cause and Effect," by C. Hanford Henderson. Quotation found in a bulletin printed for distribution at the Louisiana Purchase Exposition, St. Louis, Mo., 1904, p. 6.

## CHAPTER IV.

### The Organization and Teaching of the Manual Arts in the Grammar Grades.

In a later chapter this statement will be found: "If there is any particular place in the school process where pupils should be able to discover themselves, it is in the high school."

If this statement is true the following one is equally well founded. The place where pupils should begin to realize the necessities of life and to prepare themselves in a practical way for the requirements of some future activity is in the grammar grades.

We are becoming more and more convinced because of the industrial temper of our people, and because of the economic necessities which force children out of school as soon as the state will permit them to go, that the vocational emphasis in school work must begin early enough to prepare those who are thus affected for such a contingency. Much as we may wish to hold children in school until they are physically, mentally, and morally capable of battling with life's problems, we must recognize the overwhelming evidence, furnished by the number of children who leave school before they reach high school, that we cannot do this for all. The ever increasing large number who drop out of school during the period between 14 and 16 years of age seems to establish the fact that

if the school is to help them in any way directly to perform the constructive duties of life, it must, in the grammar grades, do a pre-vocational work and, if possible, create an industrial intelligence. Paradoxical as it may seem, doing this—the thing which would seem to invite boys and girls to leave school early in life—may be the best means of retaining them longer in school. For, the fact that they may see in their school work an opportunity to do effectively a particular community service, may persuade both them and their parents to make the necessary sacrifice to enable them to remain in school long enough to prepare fully for their chosen work. If this should prove to be the case, it is not improbable that a still longer school attendance will be the result. The life-giving qualities of even a small achievement will create a desire for greater achievement. Once the desire to succeed is created, there is scarcely any limit to the expenditure of one's effort to reach the goal of full accomplishment.

As has been suggested in a previous chapter, the work of the first period, viz., the first three or four years of school life—commonly called the primary grades—should be based upon the fact that the child's powers of appropriation are far more developed than are his powers of expression. The sphere of thought and action of the six-year old is limited to the home. With his introduction into the schoolroom, this sphere is enlarged to take in some of the conditions of other homes than his own. Not only other homes, but conditions, economic, social, and industrial, which surround all homes, both those similar to his own and others, should gradually be known to him;

and the part he is likely to play under some of these conditions should be realized.

The work of helping a pupil to realize this individual responsibility is that part of the teacher's work for which he is not specifically paid, but for which he is none the less responsible because of this fact. It is the part which will go far toward solving many of the perplexing problems surrounding the schoolroom, and particularly those which may be classed under the head of vocational guidance about which Mr. Meyer Bloomfield has so effectively written in his little book, "The Vocational Guidance of Youth." Many of the things which may be called traditional in the manual arts work should be done during this second period—the grammar grade period—in one's school life. We must not conclude because our attention has been drawn so forcibly to the need for vocational education in this period that it is only this form of education that is needed. Neither should we conclude that all the manual arts in grades 5 to 8 inclusive should be given a decided vocational turn for all pupils. We shall continue to have in the school, even though they are in the minority, those who are destined to continue in the school system through the high school and into or through the university. As Dr. Münsterberg, of Harvard has told us, it is from this class that we may expect to secure the future men of remarkable ability in the fields of science and letters. For them then, much attention should be given to their prospective work as students along the professional lines. The manual arts work for such should continue to be founded primarily upon the manual training process leading toward cultural ends. Either the formal manual training of the past must

suffice for them, or else the newer vocational manual arts must contain elements which will make it developmental for one class as well as another. It is believed that this form of manual arts work may be so organized that it will be educational in the sense that it will, as Professor William James says:

"Engender a habit of observation, a knowledge of the difference between accuracy and vagueness, and an insight into nature's complexity, and into the inadequacy of all abstract verbal accounts of real phenomena, which, once wrought into the mind, remain there as lifelong possessions."[1] He continues in speaking of the manual arts, "They confer precision, because, if you are *doing* a thing, you do it definitely right or definitely wrong. They give honesty; for, when you express yourself by making things, and not by using words, it becomes impossible to dissimulate your vagueness or ignorance by ambiguity. They beget a habit of self-reliance. They keep the interest and attention always cheerfully engaged, and reduce the teacher's disciplinary functions to a minimum."

If these good qualities may be possessed by the vocational manual arts they may well replace the former type which now so often are classed as dilettante. Then, too, the administration of the manual arts work in the grammar grades will be simple. For both the children who will continue in school work and those who will soon leave school may profit by such manual arts. The former

[1] Talks to Teachers (Atlantic Monthly, March, 1899) by Wm. James. Found in a bulletin printed for distribution at the Louisiana Purchase Exposition, St. Louis, Mo., 1904, Entitled "Sloyd. Theory and Practice Illustrated," by Gustaf Larsson, p. 7.

will receive the benefit which comes from the more versatile use of all of one's faculties, as will also the latter class to be sure, but these will also secure the special training which will prepare them for a particular vocation. The expression 'prepare them' is used because, as Dr. L. D. Harvey of Stout Institute has said,

"The schools do not give complete preparation for the work of life. Neither can they give complete preparation for the making of a living; but they should give that which may be regarded as a part of the necessary preparation for earning a living, which can be given through systematic instruction in the schools better than elsewhere. Although this preparation may be inadequate, it should be a beginning, at least, of the complete preparation desired.

"The importance of this idea will be seen when we realize the fact that more than 90 per cent of the pupils who complete the elementary course of instruction in our public school system earn such living as they have, through some form of manual labor; and that they go out from the public schools to enter upon that manual labor with no specific preparation whatever for it, and with only that general preparation which the limited range of work in the homes and the study of books in the schools have provided." [2]

There are two alternatives; first, provide two kinds of manual arts work for the pupils in the grammar grades, and second, provide one—the vocational form—and administer it so that it may be equally beneficial to all, but in different ways, if necessary. The latter is the more acceptable both from an economic point of view and an

[2] Bulletin of the Stout Training Schools, Vol. 3, No. 2, June, 1908, p. 4.

educational point of view as well. Educationally it does not seem advisable to begin segregation of a radical type as early as the lower grammar grades. However, until such time as the vocational manual arts are taught to serve satisfactorily both classes, there should be a segregation because the two classes exist, and they should each be served as far as possible by the public school.

To suggest now the possible means of providing specifically for the class of children who, in all probability, will not enter high school, and who when they leave school, if cared for in school as they have been in the past, will enter the non-productive or so-called blind-alley occupations, the following examples are given:

(1) In the large city where there may be in any one section a sufficient number whose future occupation can be determined with some considerable degree of certainty —such determination being made by conferences between parent, teacher and child—there may be established a vocational school. In Indianapolis, for example, there are several schools in which the manual arts work is typical of some particular community activity which furnishes a livelihood for the adult population. Such occupations in these schools are tinsmithing, sign-painting, shoe repairing and clothes cleaning and pressing. Together with this manual work there is a line of regular school work carried on, but always conducted in such a manner that if at any time a pupil chooses to continue in school even on into the high school, he may do so with little or no loss of time. Mr. Mirick, assistant superintendent of schools in Indianapolis, described the working of these special vocational grammar schools in a paper read before the Vocational Education Round Table at the meeting of the

Western Drawing and Manual Training Association held in Springfield, Illinois, May 5-10, 1911. In the proceedings of this meeting his paper is abstracted.

It would not be possible always, especially in the city of moderate size, to establish special schools, but in such communities there could be operated within a regular school a department which would provide for the vocational manual arts work. In the regular academic work, also, there could be a division or a class whose work would be of the applied kind particularly designed to fit individuals for an early use of their book work in their occupation. In a sense such a division, or class would be conducted somewhat the same as the "ungraded" classes are in many cities at the present time. If a special instructor could not be provided for such a group, at least some regular instructor could be found whose sympathies and understandings of the needs of the group would enable him soon to carry on the work of the group in a satisfactory manner. The necessary modification of regular teaching methods and the change of subject matter would be made in *all* subjects which the group pursued. Of course under this plan as in the first one mentioned, the academic work should be done to permit an individual to proceed into high school work as though he had followed the course of more complete preparation for such advancement.

In the small town it would not be possible always to secure a sufficient number to form a vocational department, but always with the proper incentive some special attention could be given to those whose demands meant a special rather than a general training. A good example of what may be done under these circumstances is given

in the work which is being carried on in Neenah, Wisconsin, under the supervision of Mr. Newton VanDalsen of the manual arts department, and Superintendent E. M. Beman. Here boys are permitted upon a competition basis in their regular school work to spend a half-day or more in the manual arts work, as a reward for satisfactorily completing the week's work in the regular schoolroom. Thus it is possible for most if not all boys of normal ability to undertake a work along any one of several lines which approaches closely to actual industrial or trade conditions.

It is in the smaller towns where one finds the least effort to do manual arts work of a graded and progressive kind. Here there are so many subjects to teach, and the teaching force is so limited that manual training is either neglected or found lacking in the curriculum of studies. Besides this, the boards of education are limited in means, and often are still unwilling to undertake the newer lines of educational work. Teachers, too, object to spending their time in teaching the subject for the salaries offered, or refuse to spend a portion of their time in teaching manual arts and the rest in teaching some other subject in the curriculum.

Manual arts in the rural schools is a subject of great importance. Comparatively little attention has been given the subject by those who may best determine from a theoretical point of view the character of the work. Progress is being made, however, and there is promise of some considerable development in this field soon.

One method in organization which has been successfully tried in the country school and a somewhat similar plan which is being operated in Wisconsin in towns

located in an agricultural district is worthy of mention here. Mr. C. S. Van Deusen of Bradley Polytechnic Institute, Peoria, Illinois, should be given credit for the conception of the plan. In brief it is this: Two or more communities combine to employ an itinerant instructor who gives a certain amount of time each week in personal instruction in each of the school districts in a circuit. While conducting a class he gives the necessary demonstrations and explains instruction sheets and blue-prints which he leaves with his class to enable individuals to continue work in his absence and until his next visit.

By this means the small town may secure the services of a high class instructor who could not be employed by any one community alone, for the reason that it could not afford to pay his salary. By some supervision on the part of a local teacher, as much work and probably as good work can be done as would be accomplished if the instructor met his class every day. There is, therefore, offered the small community, both from the standpoint of quantity and quality of work, a satisfactory plan of conducting manual arts classes. It should be true also, with the kind of an instructor who may be secured for this work, that the proper vocational emphasis can be given to the course of study. In this connection it may be well to emphasize the importance of manual arts to the rural community, and the importance, also, of manual arts teachers emphasizing the agricultural needs in such communities by having the projects in the classwork those which can be used in a rural community.

Speaking generally, now, regarding the possible accomplishments in the manual arts work of the grammar

grades, it may be said that at the end of the fourth grade the child should have a fairly good knowledge of how distinct types of people have lived and are now living, and should be familiar with the hand process of producing many things which these people use in their daily lives. This means that weaving, modeling, folding, scoring, cutting and pasting have all been done by him, not as an end in themselves but as a means to an end; viz., the acquisition of both knowledge and skill which later on will serve as an economic and social asset.

During the second period, that of the upper four grades, the child's work should be of such a character that he will naturally analyze his experiences of the first four grades. This he will do with the aid of the history and geography of this period, and as a result of this work which calls for analysis, he will grow into social efficiency. This means that his manual training work should gradually become more technical. The work of the first four years is given a community setting; that of the upper grades is given the individual setting or that of a unit in the community. We should remember that in these grades and before the high school period is reached, the great bulk of our American youth drop out of school. Here is the place where manual training teachers above all others have an opportunity to present school work as real work. Such a presentation must be made in order that the boy's education may be continued in school. Or if not in school, in some vocation for which he has had some real preparation in school. You may say that the age of the child in these grades prohibits industrial methods. Perhaps so, but it does not prohibit industrial tendencies. When the industrial education agitation

finally settles into definite molds, it will have introduced into the upper grades of our grammar schools a phase of industrial manual training which will save a great part of the present waste product—the boys who leave school because they see in it nothing which points the way to future life work.

Possibly enough has been said concerning the importance of providing adequately for children—the 80 or 90 per cent of the elementary school population—to prepare them for a vocational work when they leave school at the age of 14. However, there is a feeling abroad that hardly too much emphasis can be placed upon this advisable provision. In reports of educational commissions in Wisconsin, Illinois, Massachusetts and in Canada, which we may study, and in such books as those on vocational and industrial education by such prominent writers as Professors Cubberley, Snedden, Gillette, and Hanus, Mr. Arthur Dean and Dean Eugene Davenport of Illinois, much attention is paid to the subject of vocational education.[3] The work which should be done in the public school system for the boys and girls of the sixth, seventh and eighth grades is of unusual importance from an economic point of view, looking toward the stability of our national affairs. It is needless to say that the affairs of the community and those of the individual in his private life are of no less importance. Mr. Cubberley in his monograph, "Changing Conceptions of Education,"

[3] "The Changing Conceptions of Education," Ellwood P. Cubberley. "The Problem of Vocational Education," David Snedden." "Vocational Education," John M. Gillette. "Beginnings of Industrial Education," Paul H. Hanus. "The Worker and The State," Arthur D. Dean. "Education for Efficiency," Eugene Davenport.

gives us this significant summary of present conditions concerning the work of education: "The practical man would make the school over; the conservative schoolmaster clings tenaciously to the past. Criticism and skepticism alike prevail. At last the tension becomes so great that something has to give way, and progress, often rapid progress, ensues. A new viewpoint is attained, a new inspiration directs our work, new means and methods are introduced, and often a new philosophy actuates the work of the school."

While it is true that books such as those which have just been mentioned give us much food for thought, there is an element about the individual book which is unsatisfactory. We need either to read a number of books on a single subject or else to otherwise get the views of many people occupying different positions in life, and consequently viewing a subject from several angles. Besides getting the views of many upon the general subject of vocational education, we need also to have a viewpoint which will duly recognize manual training as an educational process, and will also account for modifications in present manual arts instruction intended to recognize legitimately the industrial processes.

A proper consideration of the relation between manual training and industrial education will show the necessity of a differentiation in the use of materials for the two sexes about the fifth or sixth grade, and in the sixth grade we may assume that boys are capable of beginning the use of woodworking tools. One should guard against the dissipation of energy in the grammar grades too often caused by introducing too many media of expression. We must remember that our work is tending toward definite

and fixed useful hand processes; and the old motto,—"A thing worth doing at all is worth doing well"—applies to boys and girls from eleven or twelve to fifteen or sixteen years of age.

In the upper two grades of the grammar school, sewing, cooking and applied art work for the girls; bench woodwork and art metal work, together with mechanical drawing, for the boys, seem nearly to complete the manual training teacher's field of possibilities. There is so much in the state courses of study already either adopted or definitely outlined, that it may be difficult to add to what these outlines suggest. But constantly and with repeated emphasis one should be reminded that we are liable to suffer from mental inertia if we are not continually searching for some means of interesting and holding the boys and girls in these grades, who are not attracted by the present forms of work. The public school is for the public and not for a small part of the public. Something needs to be done, and therefore the following proposition is made that it may be given consideration:

For those boys and girls in the sixth, seventh and eighth grades who, because of circumstances resulting from any conditions—financial, physical, mental or moral, due either to heredity or environment—who cannot or probably will not continue long in school, and who therefore must go to work, something must be done. This something is to teach them the elements of business or trades. The chances are that this class of children will labor in their home community; therefore, the activity of the community should be their activity. This community activity must be brought into the school or else those

governing this activity must cooperate with the school by permitting children for part of the time to work in the community shops, factories or business houses. This idea is already being worked out in many places. Who can say that it cannot be carried lower down in the school process? Would it not be better to hold boys to practical arithmetic, language, geography and history work for a half-day and know that they were spending the other half in work which they will in all probability follow for the remainder of their lives, than to lose them from the school influence entirely and know that they were becoming lifelong automatons in a factory system?

I quote here, Pres. L. D. Harvey of Stout Institute:

"I venture the assertion that the three steps which characterize the first stage in the mastery of a trade, must also characterize every phase of work in a manual training course which requires an intelligent use of tools and material in constructive processes, in accordance with sound educational principles. Therefore it follows that the first stage in the mastery of trade processes, in its rudimentary form at least, is found in all manual training courses based on sound educational principles, and that with proper equipment and competent teaching force, the manual training may be so extended as to complete the work of this stage for a considerable number of trades. The second stage may be completed in the trade school, in the shop, or in both.

"Manual training in its earlier stages must of necessity be carried on without any direct reference or relation to the development of skill in any particular vocation. The training which it gives in close observation of an object, to be produced from any given material; the results of

effort in the construction of that object; the determination of wherein the effort has failed; the training of the hand to execute the mental judgments; furnish a preliminary preparation of high value as a basis for intelligent workmanship which employs the hands later on.

"In the later development of manual training, it may be so organized as to bear a very definite relation to certain processes largely employed in the industrial world, and at the same time secure the kind of mental training needed for the proper development of the individual.

"In order to secure the facilities for industrial education which existing conditions seem to demand, the work in the elementary and secondary schools must be modified through an extension of the manual work now being carried on in a large number of schools, and yet in the aggregate, which reaches in any effective way, comparatively few. If, through these schools there is to be a direct contribution to the field of industrial education, the work in manual training must be organized with that end in view; not with the distinct purpose of teaching trades or of giving a limited line of training in a single process to the point where a high degree of skill is developed. This is not necessary indeed, in order to make the elementary schools a very important factor in industrial education.

"The practical problem for any community in organizing work in manual training in public schools, so that it may bear the most direct and immediate relation to the industrial efficiency of the boys on leaving school, is to consider; first, the manufacturing industries of the community where skill in operation is required and which are likely to furnish employment for the boys upon their

leaving school; and second, to determine the kind of training through which the boys will make the greatest progress toward skill in the special industry or industries.

"In case there are no manufacturing industries in the community in which the school is located, and it is still desired to give training which shall count most largely for industrial efficiency within the particular trades or skilled industries which are likely to prove most attractive to the boys of the community, those trades or industries are to be considered.

"The largest opportunity for reaching the greatest number who need training for skill in workmanship and for making progress in the development of that skill, lies in the modification of the courses of study in the elementary and secondary schools, by making provision for a much more extended line of manual training work than is now offered, open to all, running from the kindergarten through the high school. We have in existence the organization for carrying on this work. It may be so given as to bear a direct and helpful relation to the other work of the schools, reinforcing and strengthening that work, while that other work may be of the kind which is of general value for all pupils irrespective of their vocation after leaving school." [5]

We have already made very decided progress in this direction in a large number of city school systems. What is needed is a better organization of that work with respect to its value as a preliminary training for efficiency in industrial processes.

[5] Bulletin of the Stout Schools, Vol. 3, No. 2, June, 1908, pp. 6, 7, 8, and 9.

In conclusion, let me suggest these points for your careful consideration:

1. Define for yourself and for your constituency what manual training should be and do.

2. Consider carefully its possibilities for preparing pupils for industrial work without narrowing their outlook on life or shortening their preparation for it.

3. Regard manual training as a means of expression which shall have as a motor development subject in the curriculum both cultural and utilitarian value.

4. Select material for work which is easily available and which has a local significance, or which is of general use in the trades.

5. Use material in a well developed sequential plan of work running through consecutive grades. Make the projects progressive and of practical value for each grade, taxing to some extent the ability of the average student in the class.

6. Regard equipment expense as small and maintenance expense as almost negligible if pupils are allowed to pay for the material which is used in articles they make and which belong to them.

7. Be sure to introduce the work slowly and in accordance with the maxim, "What is worth doing at all is worth doing well."

## CHAPTER V

### The Organization and Teaching of the Manual Arts in the High School.

In the last chapter the statement was ventured that the vocational manual arts in the upper grammar grades might be the means of revealing to some pupils the necessity for continued school work to more fully prepare them for their life work. There will be some, doubtless, who will reach the high school principally as a result of the incentive for further preparation offered by the manual arts and other subjects taught in the grades. If given a life activity bearing, they will serve as an impetus for further intellectual work. There will be those too, who enter high school as a natural and regular step in a prescribed course of study.

Hence in the high school, as in the grammar grades, there are found children who are seeking information for immediate economic ends, and those also who aspire to become college and university students. The problem, then, of educating in the public high school those who may be found there is not much different in its inherent elements than the problem which was discussed in the last chapter and which concerned two general classes of students comparable to the two classes in the high school.

In the methods to be followed and in the ends to be sought, the problem is somewhat different. To begin

with we must give consideration to two important facts, viz:

First: The great majority of those who complete a high school course of study immediately thereafter enter upon the work of some wage earning position.

Second: Few if any of those who enter high school know at the time of entrance what their future work is to be.

The high school course of study must be constructed upon such broad lines that it will serve as a means of determining for each boy and girl what he or she can best afford to do as a life work, and it must also be designed to place at the command of those who are directing the great commercial and industrial interests of the world, individuals prepared for immediate active service in some life occupation. What then is the natural conclusion to be reached regarding the education of the high school boy and girl? It would seem there can be but one answer, viz: give each individual the broadest possible education in the high school to fit him for the largest possible service in the community in which he is to live. To do this we must work on the theory that few if any high school boys, in at least the early high school period, are capable of determining what their calling in life will be. Assuming this to be true the logical thing to do in outlining high school courses of study is to place in every course as many of the liberal or non-vocational studies as possible together with those which may be classed as vocational. This plan operates to afford for each individual student the means of selecting, before he reaches his senior high school year, his chosen *profession* or *vocation*. If the selection is that of a

profession, then the student plans to continue in school after he leaves the high school. If the selection, on the other hand, is that of a vocation, the student will plan, probably, to take up his life work immediately upon the completion of his high school course. In either case, the course of study for the first two or three years is such that, whatever his selection may be, he will be permitted to continue work without serious loss of time. In general, high schools now provide for the boy who will continue in college, where he may elect a course leading to one of the professions. It is not generally true, however, that the average high school provides so well for the boy who selects a vocation.

If there is any particular place in the school process where pupils should be able to discover themselves, it is in the high school. As a rule, the individual is old enough upon leaving the high school to know what his real desire is concerning a future occupation. He has determined definitely on many occasions, perhaps, just what his future *must be,* as did Richard in Dickens' Bleak House, only to change his mind within a fortnight. The high school work, therefore, should be general in its scope and yet so definite in its character as regards any particular course, that the average boy finds himself before he finishes his junior high school year, if possible. His senior high school year should be used particularly to fit him either for active life-work or college work.

No class of school teachers has a broader field in which to work than those who teach the manual arts and none has more vital problems to solve. In the old academic studies conditions have become somewhat settled and methods at least partially fixed. Not so with the manual

arts. The problems presented in the teaching of these subjects are more numerous and more varied than they ever were. However, they are not as difficult, perhaps, as many which have already been solved by the pioneers in those lines of school work which are generally classed under the head of motor training. Thanks to such men as President Runkle, Dr. Belfield, Dean Woodward and President Harvey, the work of the missionary in manual training is finished for the most part. The younger generation, of which we are a part, are not so much concerned with the question of the introduction of manual training as with the question of what kind of manual training shall be maintained.

Manual training as it is taught at present is subject to criticism because of its character. This condition, of course, is the result, in part, at least, of the employment of teachers who are unprepared for the work in hand. This is not the principal reason, however, for chaotic conditions. Manual training at present is in a formative period of development. It is transitional both as regards subject matter and teaching method. No one can say, with any reasonable degree of certainty, just what should constitute a course of study in any manual training medium. To a greater or less degree we are all experimenting and none of us who are mindful of the rapidly changing conditions are failing to be keen observers of different plans which are being tried out in different communities by those who are courageous enough to take a step forward, even though it be in the dark.

The ideas advanced by Dean Russell of Teachers College, Columbia University, on the subject of industrial education; the co-operative plan of education, which

places a boy in a factory one week and in school the next; the theory that trade education should be introduced as early as the sixth or seventh grade in the school process; the plan to make all projects in manual training courses meet the social needs and intensify the play of students; —all these and other experiments which are being tried as a means of satisfying the demand for a change in manual training are commanding our most careful attention. It is because there *is* such a divergence of opinion regarding the content of manual training that it is subject to criticism regarding its character. Likewise it is one reason why the rapid introduction of manual training is fraught with danger. And yet, one would not have present conditions different because it is only by experiment and by constantly keeping in touch with public opinion that we may hope to progress and make the most of our opportunities.

Now it is my purpose to show how manual training may be made more completely to serve as a preparation for the industries. I shall do this largely by making comparisons and by giving a personal estimate of values. First of all, let us consider for a moment the development of manual training in this country. I make the following brief review in order that we may have a common understanding of the significance of the present demand for industrial education.

In 1865 John Boynton of Templeton, Massachusetts, gave $100,000 to establish a free institute in Worcester, Massachusetts. During the next year, Ichabod Washburn, of Worcester, Massachusetts, established shops in the institution, to be used by the students in conjunction with skilled workmen to produce a commercial product.

Milton P. Higgins, who, for a number of years prior to his death, was superintendent of the Washburn Shops, used these shops, in papers read before many assemblies, as an illustration of what he considered the best plan to promote industrial education.

During the year 1868, Victor Della Voss introduced into the Imperial Technical School of Moscow, Russia, class instruction in the use of tools. It was after the plan of this Russian school that many of the early courses in manual training in this country were patterned. In 1876, at the Philadelphia exposition, the people of the United States viewed the results of the Moscow school's work, and Dr. Runkle, then president of the Massachusetts Institute of Technology, almost immediately recommended that a course in tool work be instituted there. He saw what Victor Della Voss probably did not see, viz: that there was an educational value in the work aside from the value it had in developing skill in tool processes. The result of his recommendation was the establishment of the school of Mechanic Arts as a part of the Massachusetts Institute of Technology in 1877.

Dr. Woodward, in St. Louis, followed the lead of Dr. Runkle, and, in connection with the Polytechnic Department of Washington University, was instrumental in organizing the St. Louis Manual Training School which, in a way, was a development of a course in shopwork started by him in 1872.

In rapid succession manual training was begun in Baltimore, Chicago, Eau Claire, Toledo, New York City, Philadelphia, Omaha, Denver, Boston, St. Paul and other large cities.

Time will not permit of a more extended review. I

wish to point out this fact, viz:—That, as in the case of the Chicago Manual Training School, directed for so many years by Dr. Belfield, and supported by the Commercial Club of Chicago, the purpose of all this work was to train boys for immediate service in the mechanic arts upon their graduation from high school. Then, as now, there was a feeling on the part of the general public that the public school was not doing its full duty in the education of the youth of the land. Boys went out from the high schools without any definite preparation for particular service. History, therefore, has repeated itself and after some twenty-five or thirty years of trial we are told that manual training is not fulfilling its mission.

It has been suggested that every course of study in the high school from the very beginning should include both vocational and non-vocational subjects. Specializations in the early part of one's high school work cannot be advocated. It is generally felt that it is our duty to lay foundations which are broad and general at this point in the high school process. However, with a clear conscience, one can advocate an arrangement of a school curriculum so that as early as the sixth grade the motor element in school work shall have a strong industrial significance. Indeed if this is not done we shall continue to have the great gulf which now exists between the elementary school and the high school and in which so many lose themselves forever to school work.

Concerning the organization of the manual arts in the high school Professor Chas. A. Bennett writes as follows: "It is not of greatest importance that the high school graduate shall know the contents of a certain number of books, or have power to do a certain number of specific

things, but that he shall have discovered the pathway which leads to the field of activity which he is best endowed by nature to work in is essential. He may not have observed the windings or the end of the pathway or the breadth of the field, but he should be reasonably certain as to the general direction in which it lies, and have already turned his face that way.

"If this is the chief, or even one of the chief, functions of secondary education, then it follows that the high school must afford a wide range of opportunity through a variety of studies and occupations. Indeed, it must insist upon each pupil having a rich and varied course. Especially is this true for the first two years or more; otherwise, how can a pupil be sure to discover himself? How can he discover that he was meant to serve in any particular one of the great divisions of human activity until he has tried such activity, or, at least, has obtained some knowledge of its rudimentary forms?

"To afford such opportunity as is here suggested, the school must have a course of study which is both broad and rich, covering not merely language and mathematics, but history, science, and industry as well. The course must not be dried up in one part and juicy in another, but juicy and tempting throughout.

"One of the chief obstacles in the way of realizing the full measure of results from this great function of secondary education is the establishment of specialized high schools in our larger cities. Such action affects not only the larger cities themselves, but the smaller ones also which try to copy after them. When there has been established in a given city a Latin high school and an English high school and a manual training high school,

the resulting grouping of studies for these several schools materially narrows the opportunities of the individual pupils in each one of them. Or, if there is no narrowing because there was never greater breadth, we observe that, whereas formerly, or under other conditions, each individual was given all the opportunities the city afforded, now he has only a fraction of them. Unless it can be proven that sufficient opportunity to discover aptitude is given during the several grades of the elementary schools, and that the pupil is developed enough to make intelligent use of this opportunity—which would be very difficult to prove—then the plan of having specialized high schools works against the realization of the highest ideals in secondary-school work.

"The question then arises: Is it not possible to organize a high school which shall bring together the opportunities of all these special schools in a single organic whole? When this question shall have been answered in the affirmative, and a satisfactory plan for such a school outlined, then we shall see more clearly the form and framework of a superior type of school. Moreover, this school will be as well fitted to the needs of the small city as of the large. Then the high school in the small city can be, as formerly, the same in kind, though not in degree, as the school in the largest city.

"Now that the great value of manual training has come to be recognized in secondary schools, why should not all pupils have the benefit of it? Since the manual training high school has so fully demonstrated its efficiency, and in its best form, has come to be a broad, general school with emphasis on manual training, why should not another step forward be taken by removing

that emphasis, or, better by emphasizing each of the particular lines of work to the same degree? Then, when considered from the point of view of our initial proposition, we should have a high school of a higher type than is common today.

"To be more specific with reference to manual training and drawing, every township high school should have a room equipped for woodworking, one for drawing, and another for household arts. Under some conditions, two rooms instead of three would be sufficient. The high school of a city of from 30,000 to 100,000 inhabitants should have a room for woodworking equipped for bench-work and wood-turning; another for work in cold metals such as filing and fitting, bent iron work, hand-tool turning, and sheet-metal work, including metal-spinning; a third room, of small size, should be the connecting link between manual training and physics, and be supplied with a few machine tools, a forge, and tools and apparatus for electrical construction and testing. In connection with each of these rooms there should be a stock- and tool-room and a wash-room. One large room should be provided for needlework, dressmaking, and the study of textiles, and two for drawing—freehand and mechanical. Domestic science should be classed with science and construction, art and handicraft—in fact, unity in the entire school work would yield remarkable results. A high school for a large, wealthy city like Chicago, Cleveland or Boston should contain, in addition to what has already been mentioned, rooms for forging, foundry work, machine-tool work; also extra space for drawing and art work, including the household arts, and for household science—in short, about such an equipment as is now found in

the best manual-training high schools. Such a school would be of large size, and only a fraction of the students would take the maximum amount of work in manual training. It would, however, if properly balanced, be richer in opportunity than any public high school with which I am acquainted.

"Coming back again to one of the thoughts already touched upon, the best results from a high school of this type, whether in magnified or miniature form, can be obtained only when every pupil is required to do a certain minimum of work in each of the fundamental lines of effort before he is allowed to choose his course or group of studies. In other words, before he is allowed to choose definitely his group of studies, he must have taken work in English, possibly one foreign language, mathematics, science, history, drawing, and manual training. Very few options should be allowed during the first two years. After the pupil has spent a reasonable length of time on each of the fundamental lines of study, he is in a far better condition to make an intelligent choice than he possibly could have been, had any one of these been omitted." [1]

We have thus far treated in a general way the elements of the ideal school, and drawn certain conclusions. I wish now to speak not so much about the high school giving manual training as I do about the manual training department in the high school.

The mere fact that manual training is generally conceded to have a two-fold object, viz: educational in the

[1] "The Organization of Manual Training in High Schools," by Chas. A. Bennett, Manual Training Magazine, Vol. 3, No. 3, April, 1902, pp. 136-140.

broad sense of this term, and industrial in the technical sense—has led to a great diversity of opinion concerning the nature of manual training courses. Some educators contend that all manual training from the kindergarten through the high school must be based upon psychological and pedagogical principles. This has been the means of forming different schools or classes of manual training teachers, such as the social-industrial school, the ethical culture school, and others, each having as a basis for their theories and practice certain laws which have been established by the psychologists and students of education. Another class of manual training teachers—generally those whose early training was in the engineering schools or in the industries—holds that manual training, especially in the high school, must be preparatory to engineering and industrial activities. Consequently, it must deal jointly with technical and industrial processes, and therefore develop skill.

Regarding the subject of skill let it suffice to say that if at any time in the public school work up to the time one completes a high school course, skill should be a goal in the manual arts teaching, this time is in the latter part of the high school course, and especially for those who are preparing definitely to enter a vocation.

Skill may be defined as the facility with which one thinks and acts. Skill therefore means efficiency and counts in the competition of business or trade. For efficient workers, therefore, skill is essential.

As the grammar grades do not aim to prepare efficient workers, it is not skill here which is most important but technique. The understanding of how to do things and the ability to do them well but not with great facility

is the object of the grammar grade work. Speaking broadly then we may say that the difference between the training for technique and the training for skill is at least a difference in the fundamentals of manual training, as such, and vocational training, or, more specifically, industrial training.

While it is true that manual training first got its basic principles from such great educators as Froebel and Pestalozzi, who studied the education of very young children, it is also true that in this country manual training was developed by men who were primarily interested in manufacture and the education of mechanical specialists. In consequence of this last fact, in the United States it was started in the upper high school grades with boys and girls just entering into manhood and womanhood. At least a degree of skill, therefore, as well as technique was one of the first requirements of the manual arts in this country. A definite bread-and-butter value, therefore, was given to the work of the early American manual arts work, with the result that elaborate equipments were installed for training in several branches of mechanical work. The wood-shop, forge-shop, foundry and machine-shop very early became the places for manual training work.

Now this shop organization in the manual training school soon became the beginning of one of two things: First, a training—more or less inadequate to be sure—for the trades; or second, a training in the direction of engineering education. This latter development came when, as students pursued their work in the manual training shops and as engineering work in this country assumed the dignity of a profession, there dawned upon the school

authorities the possibilities of manual training as a preliminary step toward the industries or engineering.

Today, then, we have three distinct types of high school departments of manual arts in America.

*a.* The manual training school which bases its course upon educational theory as developed in schools of education in such departments as those of psychology and child study. These schools produce teachers and philosophers rather than mechanics and engineers.

*b.* The manual training school which is located in a commercial or industrial center and is governed by a body made up largely of men from the industrial world. Schools of this type have for many years turned out men, a large percentage of whom have gone into manufacturing establishments, but who have been rather poorly prepared either as mechanics or men who become efficient foremen and superintendents.

c. The manual training school which has the same relation to the engineering college as the academy has to the college of liberal arts. These schools have given to their graduates a desire some day to do a high grade of investigational or experimental work in applied science, and so they have found a place in colleges of science and colleges of engineering.

In manual training shop courses in schools under heading *a,* those based on educational theory, one finds work being done which has a distinct theoretical basis. The course of study is based upon an outline which in many cases has been furnished by the school's department of education. Particular attention, therefore, is paid to the working out of educational theory in the development of motor activities. The subject of interest to the pupil

is often given first consideration, and in not a few cases a misconception of this much-abused word is the result. Pupils are allowed to start large projects without much if any preparation in tool manipulation. Furthermore, the object of this kind of work is neither technical skill nor the completion of objects which have a distinct utilitarian, industrial or shop value. Rather, the object seems to be the gratification of childish whims. In such courses students are liable to find that they have overestimated their ability. Before their undertaking has assumed any definite proportions, they are discouraged and the project is abandoned. The value of constancy of purpose, which always results in the building of character when a problem is continued to its completion, is lost, and, too, the prime motive of such a course, viz:—the working out of the child's own ideas. In fact, nothing seems to have been gained in such a process. It is a question if the student has not actually lost because his lack of success has developed in him just the reverse of those sterling qualities which count for success in men's achievements.

The shops in such schools are not permeated with the spirit of investigation, neither are they commercial in the sense that the spirit of industrialism pervades them. They are neither laboratories nor shops in the best sense. It is possible that the training received in them leads toward pedagogical research, but it certainly does not lead toward commercial or engineering activities.

Shop courses in manual training schools of type *b*, located in industrial centers, are the ones having most prominence at the present day, principally because they are the oldest. They started as a result of a feeling on the part of some educators and many business men that

the ordinary high school course does not give a boy a training which will enable him to make a living. Courses in these schools are not designed nor are they constructed to teach trades; they are planned to teach the fundamentals of trades and to develop more of the human faculties than the courses in the ordinary literary or classical high school do. As a rule they have accomplished their purpose. They do not, however, unless the school has truly become a trade school, make tradesmen. The result of this deficiency has led to the present wave of industrialism in education, which is forcing public opinion in favor of the trade and industrial school.

Shop courses in these schools are based upon established educational theory and upon fundamental trade principles. They have won, therefore, the commendation of educators and manufacturers. The mechanical processes that are taught are generally the cause of clear thinking by the student and a fair degree of technical skill. They usually open the eyes of the student to this extent: he is able on the completion of his high school course to determine whether or not he is adapted for mechanical pursuits. As a result of this decision, most graduates from these courses make few serious mistakes in choosing their careers. They at least serve as a coarse screen to separate boys of mechanical bent from all others.

Concerning the schools in class *c*. namely, those which prepare directly for the engineering college, nothing need be said here except this: they do not do the work of the engineering college—even that done by these colleges in the freshman year. It is also believed by those best able to judge, viz., the manufacturers, that they are doing a different line of work than they should to serve best

the manufacturer or the individual who is to begin industrial work without further school preparation. The deans of engineering colleges will also verify the statement that the manual arts work of this class of schools is not the most essential preparatory work for entrance to an engineering course. Mathematics and English are given precedence over manual arts of a special kind, or over an abundance of manual arts as a preparation for college of engineering work.

We may be led to believe three things, then:

First.—The manual arts work of the first two years of high school should be both cultural and industrial in character and represent as many fundamental mechanical activities as possible. It should be taken by all students.

For those who will leave the high school at the end of the first or second year an opportunity for specialization should be given.

Second.—The manual arts of the last two years of high school should be specifically industrial in character and should be designed to serve particularly the needs of those who will enter vocational service on leaving the high school.

Third.—For those students who will enter college the manual arts work of the last two years of high school is not important. Other subjects in the high school curriculum are more valuable as a preparation for college work.

We will consider specifically now the things which the high school may do to provide for the industries and discover, if possible, if our three findings just enumerated are sound. Let us not suppose that the high school has not always done much in this direction. It has. However, it may do more. I have hinted at a means of in-

creased efficiency in the direction of industrial training to take place *within the school.* What does this mean? This, that the high school should be organized upon the plan of a university where provision is made for a great variety of occupations. Expensive! Of course it will be, but not as expensive, I venture to say, as the plan of having two or three high schools in a community, only one of which takes account of the eighty per cent whom someone has classed as the "hewers of wood and the drawers of water." And then, too, what is our interpretation of the word expensive? Do we include cash values only in this term? If not, we must substitute for "expensive" another word, even at the expense of coining one, for certainly from the standpoint of educational efficiency, community intelligence and citizenship it would be the reverse of expensive. It would increase values in each and all of these.

Dean Eugene Davenport, of the University of Illinois, has become recognized as a strong ally of those who are tremendously interested in the possibilities of the high school. He is an advocate of universal education. As his plan is in harmony with my own views on the subject in question, I quote him as follows:

"If we will honestly take into our high schools as we have taken into our universities all the major activities of our modern life, splitting no hairs as between the industrial and the professional, for no man can define the difference, so imperceptibly do they shade the one into the other—if we will take them all into the high school as we have already taken them into the universities, and carry them along together, the vocational and the non-vocational, side by side, day after day, from first to last,

so the boy is never free from either, then will our educational necessities be met and we shall have gained a goodly number of substantial achievements." [2]

Also as follows: "The best results will always follow when as many subjects as possible and as many vocations as may be are taught together in the same school, under the same management and to the same body of men."

Again I refer to the university and large colleges, for it is in them that I find the illustration I want to express my views. These institutions provide an equipment for a diversity of interests, but it is maintained for the few who are using it for specialization. Suppose now we consider corresponding facilities for the people's college—the public high school—where many are cared for and where one gets a general rather than a specialized education.

Let us organize our high schools on much the same basis as they are at present organized, except that instead of considering the four years as a preparation for some further work, we make the preparatory period run through the first two or three years only. Or if we find it impossible for a boy to remain in the high school longer than one or two years, let us make it possible for him to get in that time the work which will help him most in the vocation he will enter. During these years in the manual training and drawing departments we will give the several subjects as broad an educational value as possible, but at the same time have them so thoroughly industrialized that they will represent precisely the existing industrial conditions. By so doing pupils will be-

[2] "Industrial Education a Phase of The Problem of Universal Education," by Eugene Davenport, Manual Training Magazine, Vol. 11, No. 2, December, 1909, p. 144.

come acquainted with actual conditions and appreciate in a measure what their future work will be should they select as their chosen field any one represented by the school courses.

Now, in the fourth year, we will in a sense segregate those who will continue school work in colleges from those who will immediately enter the industries upon their completion of the high school course.

To this latter section in the senior year we will give a special course in the vocation to be followed in life. If it is pattern-making, we will allow the boy to major, as we say in the university, in this subject. If the textile industry is his selection, let us be sure that the high school offers facilities in this field comparable with those of the industry. But in addition to the special line of work chosen we will give the pupil the advantage of the English, mathematics, history and science which will help him *most* in his future competition with others who are also textile industry workers, but who have not had the advantage of the liberalizing influence of the school.

A quotation from Dr. L. D. Harvey, president of Stout Institute, Menomonie, Wisconsin, will be appropriate here:

"I believe it possible with a course in manual training thus organized (Note: Reference is made to an organization similar to the one herein outlined) and running through the elementary and into the secondary school, to plan for special training during the last two years of the high school course for the development of skill in the processes essential in a particular trade, and thus without taking more time for the work than would be given to the manual training work proper, if the course were extended

through these two years instead of substituting the trade instruction for it.

"It is a beautiful saying, that the purpose of education is to make a life, rather than to make a living. But on this mundane sphere where people have to eat, and be clothed, and provided with shelter, the first element in the making of a life is making a living. One may make a living without living a worthy life; one may make a living and live a worthy life; one cannot live a worthy life without a living. Most men in the natural order of things are responsible not only for their own living, but for the making of a living for others in order that they may make the most of themselves.

"From the standpoint of the state, the necessity for good citizenship is the fundamental argument for the establishment of a public school system. Since the making of a living is the first essential in the making of a worthy life and the first requisite for service to society, it follows that the fundamental argument for an education from the standpoint of society and the individual is the 'bread-and-butter' argument. In other words, society and the individual demand that in the organization of the public school system the first aim shall be to provide such a variety of schools, such courses of study, with such equipment, and such teaching force as shall furnish that initial preparation necessary for the earning of a living." [3]

It is possible that we shall be agreed upon the general content of this thesis, but those of us who are school administrative officers will possibly criticize it on the

[3] Bulletin of The Stout Training Schools, Vol. 3, No. 2, June, 1908, pp. 4 and 10.

ground of its being impossible from the standpoint of administration. For such I suggest this as a solution:

Permit the high school to cooperate with the manufactories and industrial establishments of the community, the school to continue to be the adjudicator of the academic work, and the factory to supply the industrial conditions and adjust itself somewhat to the conditions of those of school age. This plan for adults is already in operation in the University of Cincinnati. For public school children a somewhat similar plan is being tried in the East at Fitchburg, and Beverley, Massachusetts, and other cities. Nearer home, we have at Freeport and Moline, Illinois, school and factory cooperation which promises to be successful. Time alone can give us an opportunity of deciding whether those in charge are on the right road. Whatever may be the outcome of plans of this kind I cannot feel that they will meet with the same success as the one offered in my first suggested plan. You will say, however, that the university organization in the high school is only applicable if at all to the large cities. If this is true, then I suggest this modification—one, by the way, which is now operative in certain small high schools in Wisconsin:

Organize within the small high school manual training and industrial work which shall be guided by some large center—a normal school, a large high school, or, the university. Let the director in this center cooperate both with the local school board and with the industries of the community in determining the kind of work to be introduced. Select some individual who will be competent to teach the course outlined and give him a circuit in which he will have a sufficient number of schools to occupy his

time. It seems to me that this plan would be much more feasible than the one which necessitates the manual arts work of the pupil to be done in a factory, because it provides for a more general supervision and a control by several interests instead of one; also, because the instructor would, in all probability, be selected partially because of his knowledge of school conditions, whereas the factory instruction is likely to be given by a factory operative or an individual who will be unable to see the large problem and coordinate the work of the shop with that of the school.

However this may be, one feature of any of the three plans suggested should be emphasized as imperative, viz: Put the special work followed by the pupil under the supervision of the leaders in the industry represented. I do not believe we shall ever get industrial conditions to obtain in the school if we allow schoolmen to organize the work of industrial courses, unless they have had the special industrial training needed. On the other hand, I maintain that the executive heads in the school system must remain in general control. Germany and England give us our best illustrations of combined school and community management in which there is co-operation between the school authorities and the industrial leaders.

There is at least one other cooperation between the school and the world outside of the school which needs emphasis. Important as the cooperation between the school and the industries is, of no less importance is the co-operation between the school and the farm. From the vocational point of view, if there could be the same opportunity for initiative on the part of the boy and girl in the congested communities that there is for the boy

on the farm, and that there was formerly for all boys and girls, we might not need the manual arts in the city. It is to supply, in a way, the independent activity of the boy on the farm that manual training is put into the city school. Especially at this time when agriculture is becoming such an important vocational subject in the high school, an effort should be made to use the manual and domestic arts to supplement and to extend the work of agriculture. There is no better field from which the manual arts teacher may select projects for construction than that of the home and particularly the home on the farm. The prospective teacher of agriculture or the teacher of manual arts might well prepare himself to teach the other of these two subjects.

I have just one more suggestion to make in conclusion, viz:

Whatever means we take to make our high school manual training more nearly prepare for the industries let us be sure that in season and out of season and all the time we introduce into our work design which shall eventually make our industrial products compare favorably from an artistic point of view with those of foreign producers. What a great humiliation it is that we, the American people, leaders in so many lines, are so deficient in industrial aesthetics. The designers in American industries are not trained in America; indeed they are not, as a rule, Americans. What a wonderful change can be made in this condition in the next decade if we will lay emphasis upon good design in all our work. I believe there is even greater need for study of design on the part of manual arts teachers than for a more intimate knowledge of industrial processes.

In conclusion, now, I wish to quote the father of manual training in this country, Dr. C. M. Woodward, formerly principal of the St. Louis Manual Training School, and dean of the Engineering College of Washington University, where he suggests the lines of work to be carried on in a high school department of manual arts.

Dr. Woodward writes: "The shops I recommend are woodworking shops in which ordinary bench tools are used, where a variety of hard and soft lumber is wrought upon, and where the fundamental principles of workmanship are taught; secondly, a wood-turning shop, which is always a pattern-shop, where opportunities for learning the complete alphabet of steps in wood-turning are provided; thirdly, the first metal shop, in which metals are heated and thereby made ductile and pliable.

"The fundamental processes of a forging shop are very few in number, altho their applications are countless; but these fundamental processes must be learned step by step, studying all the while the degree and influence of heat, and the behavior of iron and steel when heated, and heated to different degrees. There is so much in a forging exercise for the learner to master that it is better to divide it, the first step being a question of form and of manipulation; the second, a question of heat and the flow of metal under the hammer. The first can be learned with an extremely ductile metal like lead; the second, with hot iron and then with hot steel.

"The fourth shop is the molding and casting shop, where the use of patterns is fully illustrated and the methods of making molds are mastered so far as the elements go. The process of molding and casting determines many of the details of patterns, and the pupil

learns how patterns must be divided; what cores are for, and how they are made; and what core-prints are, and how they are used.

"The most expensive shop of all is the fifth, in which the use of tools for cutting and fitting the harder metals without the assistance of heat is learned. This is ordinarily known as the 'machine shop,' inasmuch as the tools are largely machine tools of considerable complexity, altho there is always a certain proportion of bench work connected with all machine work. It is in this shop that we find the most elaborate, the highly scientific, appliances, and it is a fine educational achievement for the pupil to master the separate tools, to learn their uses and their requirements. The whole theory of metal-chipping, filing, drilling, planing, and turning is new to him, and intensely interesting. Accordingly, the shop should be equipped with certain standard tools for the processes I have named. The lathes, drills, and planers need not be large, but they should be ample for such exercises as are found useful in the course of instruction. As the pupil's mastery grows, he sees more quickly the logic of a machine, and he thinks over again the thoughts of the designer or inventor, and appreciates, as he never appreciated before, the high qualities of the skilled expert.

"The machine shop, like all other shops, should be fitted for regular sections of students numbering not over twenty-four, nor should it accommodate less than twenty.

"I have not time to dwell upon the importance of mechanical drawing, which from the beginning to the end should accompany shopwork. The drawing easily outruns the shops. It goes into fields too difficult and too complicated for the shop teacher to follow, but it should be

thoro and thoroly intelligible at every step; not for art work merely, nor for the crafts, but for both, and for the culture of the geometric imagination. So long as drawing is based upon principles which can be clearly stated and understood, it is within the reach of every rational pupil." [4]

It probably is true that Dr. Woodward's list of shops and shop processes to be included in the manual arts of the high school is not complete enough for those who would make the public high school meet as fully as possible the industrial needs of the present. It certainly is true, however, that those enumerated by him are among those for which provision should first be made. Others may be added or substituted depending upon the local demands of the community.

Allow me just a closing word in summarizing the four most important points which I have endeavored to make in this chapter:

*First.*—An intermediate school to provide for those in the seventh and eighth grades who now take advantage of their first opportunity to leave school—the time when the State ceases to compel them to attend school, should be established.

*Second.*—Organize one or more general high schools in a community instead of two or three special high schools. In this school during the first three years compel all pupils to take at least a minimum amount of manual work which is both good manual training and good industrial work. Also provide for specialization along industrial lines, especially, in the fourth year.

[4] Addresses and Proceedings of the National Educational Association, 1905, pp. 266-270.

*Third.*—In case the *general* high school organization is not feasible or possible, provide for specialization in industrial work by a school-factory cooperation or by the circuit instructional method wherein supervision will be obtained from recognized authorities representing both the school and industrial interests, and provision for maintenance will be made through an educational extension department.

*Fourth.*—Inject into all drawing and shopwork a large amount of sane design.

## CHAPTER VI.

### The Teacher and the Supervisor of Manual Arts.

The discussion upon the qualifications of the teacher and the supervisor of manual arts has been reserved for the last chapter because of all that has been said in this book, it should be the most important part, and consequently may be considered as the climax of the whole.

Past experience has shown that where the manual arts have been continued in a community they have oftentimes been poorly taught. When an analysis of failures has been made it may be safe to say that in most cases they have been due largely if not wholly to inefficient teaching. Perhaps not a larger number of failures have occurred in the conduct of manual arts work than in work carried on in other branches of school during a similar period of development. It is to be expected that in the experimental stage in the teaching of any subject mistakes will be made which will result in criticism, if not in the abandonment of the subject for a time. Notwithstanding this fact, however, it would seem that now after nearly thirty years of manual arts in this country, and when the subject is so well established and so generally taught, there should be few, if any, attempts to organize and teach the subject without ultimate success.

And yet there are at least two very well defined reasons why we may expect quite as much criticism of manual arts

teaching within the next few years as has been made during any similar length of time in the past, unless we recognize present limitations and future needs. Naturally enough one need is an understanding of the very rapidly changing conditions which have been set forth in this volume and which it attempts to explain in such a way that adjustments may be made to guard against failures or even partial failures in the future. A second reason is the great dearth of teachers who are qualified to conduct properly manual arts classes, to say nothing of the manual arts department where several subjects in the manual arts are taught.

It may be advantageous to have before us some of the reasons for past failures before we consider the qualifications of the teacher and the supervisor. Two very striking deficiencies in the average manual arts teacher are apparent to one who has visited schools and who has an acquaintance with many who are responsible for the teaching or the supervision of the manual arts.

First, I would say that a very limited preparation either for the general work of a teacher or for his specific work has been the cause of many disappointments of boards of education in the work accomplished by the ones who were employed as proficient manual arts teachers. The demand for manual training has been so great that men and women have been drafted into service who have had only a very meagre preparation for their work. In the grades, especially in the primary school period, the regular teachers have been expected to teach manual training without any preparation whatsoever for the work. They have been dependent upon supervisors' outlines and a very few supervisors' meetings to give them any ability to

either handle the materials used or to comprehend the scope of manual training. In the grammar grades the same thing has been true except in a comparatively few cases during the past few years when special teachers have been employed. These, as a rule, until very recent years have had little or no training in the manual arts, and almost never any training in the teaching of the manual arts.

In the high school it is easy to trace developments. The first teachers here were either mechanics or graduates of schools of technology. Both proved inefficient because they could not teach the subject which they presumably knew well. They were individuals, too, who had almost no appreciation of design and no ability as designers. Next came the normal art school graduate who directed work in the art crafts; or the graduate of a school in which the work in a department of education had been the individual's major, because of which fact it was supposed he would be a good teacher. Such preparations were found to be inadequate for the field of manual arts teaching.

Finally, after the manual training high schools and normal schools were established, their graduates were drawn upon to occupy this field. The large majority of the present manual arts teachers are those who have received their complete school training in such institutions.

The present success of the manual arts is largely due to the teaching which has been done by men and women of this class. Whether this success has been great or small it is certainly true that in the past a teacher's shortcomings have been due to a very limited academic training. This class of teachers has found it difficult to cope

with their colleagues in matters of general education because of a narrow point of view. Herein is to be found one of the needs of the future. It is not enough for the teacher to be proficient in his own field; he must also have a sufficient training in the several branches of educational work to be capable of commanding the respect of his colleagues and his pupils. Unless he can perform well and with considerable skill the operation in which he expects high standards of his class, he cannot hope for their confidence nor will he get it. Not infrequently teachers have been found incompetent as technicians. It is difficult to find a teacher who can teach well more than two or three of the manual arts subjects. Nevertheless, one is often expected to handle all the subjects in a department where mechanical drawing, woodwork and metal work are taught. One argument for the tradesman-teacher in our high schools is his technique and skill.

A third cause for past difficulties is closely related to that of poor preparation. It is the *course of study* which has been followed blindly. Without an understanding of child life and its significance in school work; with scarcely any knowledge of conditions aside from those affecting the handling of materials, it is little wonder that the term "course of study" has been a misnomer in the manual arts work. As was explained in a previous chapter the so-called courses have ranged between those which are characterized by their extreme formalism, and those which are the expression of the whims of children.

A fourth element in some of the unsuccessful teaching of the past has been an over-equipment or, at least, one which would be regarded as extraordinary by one who

really knew how to meet conditions. Communities have therefore lost confidence in the manual arts teacher who thus failed in an important part of his work.

The time given to manual arts also has been so small, especially in the high school, that nothing more than amateurish results, from the stand point of journeyman labor, were possible. It is this standard which the average citizen has used in judging the results of the manual arts. If in any appreciable way we are to emphasize *subject matter,* and secure results which will make it possible for boys and girls to do a vocational work when they leave school, more time must be demanded in that part of the course where skill rather than technique is necessary, or the manual arts rather than manual training receives the emphasis.

It must be apparent from the five reasons above given for some of the mistakes of the past, that we cannot expect in our public schools to comply with the demands for vocational education unless more attention is given by the prospective manual arts teacher to his preparation for teaching. This must involve both a broad education and a specific training in the particular shopwork or drawing which he is to teach. Fortunately schools for the training of manual arts teachers have been established and men who employ teachers are demanding of them both general education and particular professional training. With an understanding of the needs, it is hoped that the demands will be met.

In the minds of many it is a question whether any school can supply the shop conditions of a commercial shop. It is under commercial shop conditions that one should be trained who expects to teach in the in-

dustrial education field. While it is true that the teacher of industrial work should be trained as an industrial worker, and probably true that the public school manual arts teacher should have had some industrial experience, it is likewise true that both of these teachers must be trained in the art of teaching. We do need practical shopmen and draftsmen in our schools, but we need, quite as much, the man of broad academic training, and the one who can teach what he knows.

The first training, however, secured as a result of a good college course with emphasis on the elements of teaching and with special practice in the technical work to be taught must be considered as only a beginning, for the real teacher is always a student. As has been suggested, to be a master of the processes of preparing, shaping, fastening and finishing the materials with which the teacher is to deal in his classes is not enough. It is to be assumed also that the manual arts teacher in any grade of work is cooperating with the other teachers in the educational process to keep the content of a pupil's work well defined and to permit all teachers to assist in securing certain general school standards. The shop teacher and the drawing teacher each has an opportunity, which he cannot afford to lose, to aid in securing clear-cut descriptive work in English, and, by concrete illustration, to make mathematics understood.

There are four fields of study which should be of constant interest to the manual arts teacher. They are psychology, education, sociology and technology or industry.

By means of correspondence with other teachers, through the medium of the best literature, and as a result

of connection with associations he will supplement his first knowledge and verify his daily classroom experience in the work of a student-teacher. This means continued study which acts and reacts upon one; first, as an individual associated with those of immature mind; and second, as one who keeps abreast of the times by keeping in close touch with the work of the world.

It is not necessary that one should be a specialist in the several branches above mentioned, but he must be familiar with the fundamentals in each and with that portion of each which he may use. Hence, in psychology it is the scientific basis of thought and action; in sociology, the materials of social inquiry, and their economic and industrial uses; in education, the theory determining the scope of manual training; and in engineering and industry, the usable engineering theory regarding the principles of construction in each branch that is needed. The particular study and practice by which the manual arts teacher should continue to make advances will be found in the fields of education and industry.

To still further emphasize what has been said about the manual training teacher, may I give a brief statement of the qualities which Henry Turner Bailey, once supervisor of drawing in the state of Massachusetts, now editor of the School Arts Book, says are of unquestionable importance as qualifications of the manual arts teacher?

At the top of the list he places the following personal elements: A charm of manner, a personal magnetism. To these we might add "a saint-like smile," to use the words of the great Uno Cygnaus. He must be optimistic, sympathetic, and have an objective as well as a subjective view.

Next in order Mr. Bailey places as a qualification, executive ability, control and insight. Someone has said, "the teacher of the manual arts must have many details in mind but he must reduce them to order and get pupils to take responsibility. He must have a policy planned and kept in mind which will result in pupils taking the initiative. Like the supervisor who seeks to direct him, he must have tact and geniality with his pupils, which will serve him as lubricants for official machinery warm (sometimes hot) with the friction of misunderstanding. Above all things he must have common sense."

Concerning the education of the manual training teacher Mr. Bailey says he must have a general culture based upon both scholastic and technical instruction and experience. The school to him must be a research field, and he must see in it a place where the child reacts upon an immediate environment—where the child lives, not prepares to live.

Another very important factor in the organization and maintenance of manual training is the supervisor. There was a time when he was unknown, but now even in the smaller towns and surely in the cities he is indispensable, provided he is the right man in the place. Manual training today has arrived at the stage where it needs standardizing. No one can help in this process as well as the supervisor. We need, besides the town or city supervisor, a state supervisor or inspector. It will not be many years before he will appear upon the scene. If we look to our mother country, England, we find what state-wide inspection means—in general, to learn lessons in organization which, in turn, mean higher efficiency and economy.

The good supervisor must first of all be a good teacher.

Not all good teachers, however, will make good supervisors. Besides being a good teacher, he must be sympathetic, both as a student and as a business man. He must be an organizer. Perhaps the power to get all parts of a great system to work in harmony, and each part to have a particular duty for which some one individual will be responsible is the large work of the supervisor. Certainly this function is one which requires the greatest tact and diplomacy. He must be a man of purpose and determination, but very often he must secure results by taking steps and making moves with the greatest of care, and sometimes he must study his problem from every point of view. Not infrequently he will secure what he wants only after great delay and an unwise expenditure of money. But he can afford to wait and to allow others to take the initiative, even at the expense of immediate results, if in the end he "accomplishes things."

In Stout Institute Bulletin No. 4, for December, 1908, page 41, we read in reference to the supervisor: "His work divides itself into three stages: first, preliminary organization; second, class organization; and third, the re-organization period. The preliminary organizing should be done either before the close of school or before or during vacation. If it is the case of installing a plant, this becomes not only the most important part of an organizer's work, but the severest test of his ability. In fact, many an aspirant for manual training honors has lost or won during these preliminary weeks."

By preliminary organization is meant that planning which must be done during the vacation preceding a school term, and often the readjustment of these plans at the beginning of a term when the actual conditions under

which plans must operate can be determined. There is the outline of courses of study, the planning for teachers meetings, the securing of teachers, and the purchase, distribution and classification of material which must be attended to during this period and before actual class work begins.

The class organization work runs through the school year, but is most urgent at the beginning of school work. It is the plan of work which accommodates the time schedules, takes account of classroom conditions, interprets the strength of teachers and the thousand-and-one things which make for a perfect system, where energy will not be wasted, but where there will be conservation of material, pupils and teachers throughout the year.

The reorganization work may come at any time but usually when some unexpected situation arises making the regular plan ineffective. It will always come at the beginning of a new term in any year after the first one when the preliminary plans and regular classroom plans were made. In the work of reorganization the supervisor again shows his ability to use tact, for he must often change the plans of others dependent upon his own. In doing so he must keep in mind both ends of the course which he has planned. He must not let trying contingencies permanently cloud his broad view of the year's work as a whole, but he must sacrifice here and expand there to the end that the original plan will be carried out with as few interruptions as possible.

The plan referred to must not be a yearly program from which one cannot vary. On the other hand it must be an outline of desired accomplishments; the result of much thought as to the abilities of both pupils and

teachers, and of the possibilities and limitations due to the number involved. The plan must be one which can be and will be changed, but which operates more or less constantly as does any well designed and well kept machine. Like the machine, the plan must be one which will accommodate itself quickly to sudden changes. Parts will become over-strained and possibly will break; repairs must therefore be made, and made so quickly that the whole may continue to give out a product which will pass inspection both as to quality and quantity.

The plan then must be general in character, and yet so well defined, and its results from week to week so well recorded that at any time one may determine just what must be done next in order that the plan as a whole shall continue intact. Not only this but the plan must be easily read and followed by anyone, for new teachers must take the place of old teachers and such interruptions must not affect the continuance of operation.

Of all the elements which contribute to the success of such a plan, not the least will be the careful records kept by the supervisor, the helpful suggestions which he will give as a result of a systematic weekly study of these records. True it is then that he must be a most versatile individual; the best of teachers, a business man of unquestionable ability, and a promoter who, because of his ability to handle men and things, knows nothing but that which spells success.

Concerning the supervisor, Dr. James P. Haney, for a long time supervisor of drawing and manual training in New York City, says:

"Among the elements which make for successful supervision, the attributes of the supervisor himself must be

given an important place. He stands as the professional adviser of both superintendent and grade teacher, and must, in his attitude, reveal his professional pride in his calling. He must be a teacher in the broad sense of the term, one who leads others to a realization of the excellence and worth of the subject he presents; a teacher not necessarily demonstrating some lesson, but one acting as an animating agent, aiding not only by direct suggestion, but by general guidance and stimulus to higher professional life." [1]

"The supervisor," says Henry Turner Bailey, "whom teachers respect and whose visits they enjoy, the one for whom they will work overtime and never tell, the supervisor whom the children love and for whose sake they will do anything, is one who serves consistently, sympathetically, abundantly." [2]

I am sure we may agree with those whom I have quoted and with others whose views I have used that for the manual training teacher and supervisor the road to success is long and sometimes tedious, but with the goal at the end—viz., the child and his needs—kept in mind, he will always be furnished with an incentive to lead him on, not blindly, but with a vision which makes both class interests and individual necessities keenly felt and met by his associates as well as himself.

[1] "The Supervisor," by James Parton Haney, Year Book; Council of Supervisors of The Manual Arts, 1903, p. 15.

[2] "The Supervisor's Chief Business," by Henry Turner Bailey, The Applied Arts Book, Vol. 2, No. 2, October, 1902, p. 34.

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